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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/424,686	11/29/99	HAGEN G	BAYER10.203

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EXAMINER	
WALICKA,M	
ART UNIT	**PAPER NUMBER**
1652	10

DATE MAILED: 08/15/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/424,686	HAGEN ET AL.	
	Examiner	Art Unit	
	Malgorzata A. Walicka	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 June 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) *5,8,9 and 12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7,10,11 and 13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *6* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *See Continuation Sheet* .

Continuation of Attachment(s) 6). Other: US patent 6,166,178, title page,columns: 7, 8, 9, 10, 11, 12, 21, 22, 37, 38, 13, 14, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 202, 203, 204, 205, 206, 207, 208, 209, 201, 211, 212,213, 214. .

The application is a 371 of PCT/EP98/03468, filed November 29, 1999.

The examiner acknowledges Response to the Restriction Requirement, without traverse, filed on June 29, 2001, paper No. 9. Applicants elected Group I claims 1-5, 7, 10, 11 and 13 drawn to catalytically active subunit of the human telomerase. Claims 1-13 are pending in the application. Claims 1-5, 7, 10, 11 and 13 are the subject of this Office action; claims 5, 8, 9, and 12 are withdrawn from consideration as directed to the nonelected inventions.

Lack of compliance of nucleotide sequence disclosure with 37 C.F.R. 1.821-1.825

This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825 for the reason(s) set forth on the attached Notice To Comply With Requirements For Patent Applications Containing Nucleotide Sequence and/or Amino Acid Sequence Disclosures. Applicant must comply with the requirements of the sequence rules (37 CFR 1.821 - 1.825) before the application can be examined under 35 U.S.C. §§ 131 and 132.

Applicant is given ONE MONTH from the mailing date of this communication within which to comply with the sequence rules, 37 CFR 1.821 - 1.825. Failure to comply with these requirements will result in ABANDONMENT of the application under 37 CFR 1.821(g). Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a). Direct the reply to the undersigned. Applicant is requested to return a copy of the attached Notice to Comply with the reply.

Detailed Office Action

1. Objections

1.1. Specification

The specification is confusing as to the Fig.1a. There is no Fig.1a among the figure sheets and in Figures Explanation on page 14 line 16. Yet Fig. 1a is mentioned on page 9 line 3 and 8, and on page 10 line 27.

Page 20 contains only 3 lines; page 44 only 5 lines; the pages should not be empty.

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicants' cooperation is requested in correcting any errors of which applicant may become aware.

1.2. Drawings

This application has been filed with informal drawings, which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

2. Rejections

2.1. 35 USC, section 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-5, 7, 10, 11, 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is directed to catalytically active human telomerase subunit (hTC), which is human telomerase reverse transcriptase (hTRT), yet the claim does not recite the specific amino acid sequence that identifies the subunit. Without quoting the sequence identification number of the hTC the claim remains indefinite.

Claim 2 is indefinite, because it recites the amino acid sequence depicted in Fig. 1b, whereas the disclosure does not contain Fig. 1b.

Claim 4 is indefinte, because it recites the nucleic acid sequence depicted in Fig. 1a, whereas the disclosure does not contain Fig. 1a.

Claims 3, 5, 7, 10, 11 and 13 are included in the rejection because they depend on the rejected claim 1 and do not correct deficiencies of the claim from which they depend.

Claims 2 and 3 recite the limitation "Telomerase according to Claim 1" in line 1. There is insufficient antecedent basis for this limitation in claim 1. Claim 1 is directed to the catalytically active human telomerase subunit. Claims 7 and 13 are rejected as depending on claim 3, because they do not correct deficiencies of the claim from which they depend.

Claim 7 provides for the use of nucleic acid according to claim 3, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 7 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim 10 is confusing for reciting the phrase "in particular DNA" that is redundant; RNA sequences are not introduced to vectors. To make the claim clear, the examiner suggests deleting "in particular DNA."

2.2. 35 USC, section 112, first paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:
The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1-5, 7, 10, 11 and 13 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the hTC protein identified by SEQ ID NO:2, for its functional equivalents (telomerase reverse transcriptases, TRT) as exemplified by p123 of *Euplotes*, and yeast estp protein, for the hTC protein variants named Variant 1-4 in Example 11, and catalytically active fragments used in the reconstitution of the catalytic subunit *in vitro* (Example 15), does not reasonably provide enablement for all functional equivalents coming from any natural and man-made source and all possible variants and catalytically active fragments of the hTC. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Claims are so broad as to encompass any functional equivalent of the hTRT from any biologic source and all variants of hTRT and its catalytically active fragments. The scope of the claims is not commensurate with the enablement provided by the disclosure with regard to the extremely large number of TRT from any biologic source and all variants of hTRT and its catalytically active fragments broadly encompassed by the claims. Since the amino acid sequence of a protein determines its structural and functional properties, predictability of which changes can be tolerated in a protein's amino acid sequence and obtain the desired activity requires a knowledge of and guidance with regard to which amino acids in the protein's sequence and which deletions are tolerant of modification and detailed knowledge of the ways in which the proteins' structure relates to its function. However, in this case the disclosure is limited to SEQ ID NO:2, the full sequence of hTRT, its functional equivalents of *Euplotes* and yeasts, the hTRT variants named Variant 1-4 in Example 11, and fragments of hTRT used in Example 15.

While gene cloning, recombinant and mutagenesis techniques are known, it is not routine in the art to clone all possible TRT from all organisms, to screen for all possible modifications of the hTRT sequence, as encompassed by the instant claims. It is known in the art that the positions within a protein's sequence where amino acid modifications can be made with a reasonable expectation of success in obtaining the desired activity/utility are limited in any protein and the result of such modifications is unpredictable. The specification does not support the broad scope of the claims which encompass all modifications and fragments of hTRT because the specification does **not** establish: (A) regions of the protein structure which may be modified and deleted without effecting activity; (B) a rational and predictable scheme for modifying or deleting any residues with an expectation of obtaining the desired biological function; and (C) the specification provides insufficient guidance as to which of the essentially infinite possible choices is likely to be successful.

Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope of the claims broadly including any functional equivalent and deletion or amino acid modifications of hTRT. The scope of the claims must bear a reasonable correlation with the scope of enablement (In re Fisher, 166 USPQ 19 24 (CCPA 1970)). Without sufficient guidance, determination of the variant or fragment having the desired biological characteristics is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988).

2.3. 35 USC, section 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless - (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claim 1-5, 7, 10, 11, and 13 rejected under 35 U.S.C. 102(e) as being anticipate by Cech et all, US Patent 6,166,178, issued Dec. 26, 2000, with priority date Oct. 1, 1996. The patent entitled "Telomerase Catalytic Subunit" discloses the cDNA (SEQ ID NO:1) and amino acid sequence (SEQ ID NO:2) of human telomerase reverse transcriptase.

SEQ ID NO:1 and SEQ ID NO:2 of the patent (enclosed) seem to be identical to SEQ ID NO:1 and SEQ ID NO:2 of the instant application.

The patent discloses also the functional equivalents of the enzyme; for example, telomerase reversed transcriptase from *S. pombe, Euplotes and S. cerevisiae*, see enclosed Description of the Figures.

In addition, the patent discloses variants of the human catalytic subunit, fragments or derivatives, see column 37, line 26, as well as sense and antisense nucleic acids that bind to the human reverse transcriptase or its mRNA, see column 14, line 19 (both pages enclosed). The patent provides for recombinant expression of the catalytic subunit of the enzyme in protein in bacteria, yeast, insects and mammalian cells, see Example 6, all pages enclosed. Thus, the teachings of the patent cover the scope of claims 1-5, 7, 10, 11 and 13 of the instant application.

3. Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Malgorzata A. Walicka, Ph.D., whose telephone number is (703) 305-7270. The examiner can normally be reached Monday-Friday from 10:00 a.m. to 4:30 p.m.

If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapura Achutamurthy, Ph.D. can be reached on (703) 308-3804. The fax phone number for this Group is (703) 305-3014.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionists whose telephone number is (703) 308-0196.

Malgorzata A. Walicka, Ph.D.
Art Unit 1652
Assistant Patent Examiner

PONNATHAPU ACHUTAMURTHY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600

Application No.: 09/424,686

NOTICE TO COMPLY WITH REQUIREMENTS FOR PATENT APPLICATIONS CONTAINING NUCLEOTIDE SEQUENCE AND/OR AMINO ACID SEQUENCE DISCLOSURES

The nucleotide and/or amino acid sequence disclosure contained in this application does not comply with the requirements for such a disclosure as set forth in 37 C.F.R. 1.821 - 1.825 for the following reason(s):

[X] 1. This application clearly fails to comply with the requirements of 37 C.F.R. 1.821-1.825. Applicant's attention is directed to these regulations, published at 1114 OG 29, May 15, 1990 and at 55 FR 18230, May 1, 1990.

[ ] 2. This application does not contain, as a separate part of the disclosure on paper copy, a Sequence Listing as required by 37 C.F.R. 1.821(c).

[X] 3. A copy of the Sequence Listing in computer readable form has not been submitted as required by 37 C.F.R. 1.821(e).

[ ] 4. A copy of the Sequence Listing in computer readable form has been submitted. However, the content of the computer readable form does not comply with the requirements of 37 C.F.R. 1.822 and/or 1.823, as indicated on the attached copy of the marked -up Raw Sequence Listing.

[ ] 5. The computer readable form that has been filed with this application has been found to be damaged and/or unreadable as indicated on the attached CRF Diskette Problem Report. A Substitute computer readable form must be submitted as required by 37 C.F.R. 1.825(d).

[ ] 6. The paper copy of the Sequence Listing is not the same as the computer readable from of the Sequence Listing as required by 37 C.F.R. 1.821(e).

[ ] 7. Other: _____

Applicant Must Provide:

[X] An **initial** or substitute computer readable form (CRF) copy of the Sequence Listing.

[ ] An **initial** or substitute paper copy of the Sequence Listing, as well as an amendment directing its entry into the specification.

[X] A statement that the content of the paper and computer readable copies are the same and, where applicable, include no new matter, as required by 37 C.F.R. 1.821(e) or 1.821(f) or 1.821(g) or 1.825(b) or 1.825(d).

For questions regarding compliance to these requirements, please contact:
For Rules Interpretation, call (703) 308-4216
For CRF Submission Help, call (703) 308-4212
For Patent software help, call (703) 308-6856

PLEASE RETURN A COPY OF THIS NOTICE WITH YOUR RESPONSE